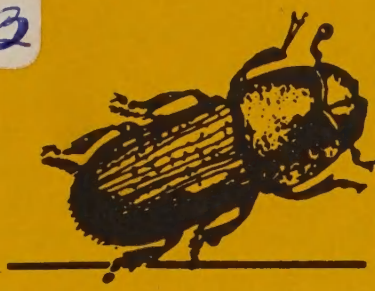

Southern Pine BEETLE NEWS

No. 18, March 1980

Hazard Rating Begins In Upper Piedmont

Late this winter, the Georgia Forestry Commission started a stand hazard-rating system for southern pine beetle control in the Upper Piedmont. Studies in the Upper Piedmont of Georgia show that natural stands highly susceptible to southern pine beetle attack have certain stand, host, and soil conditions.

High-hazard stands have shortleaf pine mixed with few hardwoods. The pines have slow radial growth and are rooted in heavy clay soils. Southern pine beetle attack symptoms are yellow or reddish-brown crowns on the tree, small pitch tubes on the middle or upper bole sections, and S-shaped galleries on the undersurface of the bark.

The following hazard-ranking system has been developed for rapid onsite evaluation of stand susceptibility.

Stand

1. Shortleaf pine makes up more than 50 percent of the total pine .....Yes__No__
2. Hardwood component makes up less than 25 percent of the total stand .....Yes__No__
3. Pine basal area is more than 130 ft^2/acre .....Yes__No__

Representative Tree

4. Radial growth during the last 5 years is < ½ inch .....Yes__No__
5. More than 40 percent of the crown appears to be live .....Yes__No__
6. Soil is micaceous red clay .....Yes__No__

Yes total __

If "Yesses" total 5 or 6, the stand is at high risk for SPB attack. Totals of 3 or 4 indicate moderate risk. Totals of 0, 1, or 2 indicate low risk to beetle attack.

If a stand is at high risk, one should make intermediate cuttings to sustain rapid growth. Salvage cuttings are recommended to utilize dead trees, and sanitation cuttings can be used to reduce beetle spread to healthy trees.

Cultural treatments should favor loblolly pines or mixtures of pines and hardwoods. The stand and site should be carefully tended while harvesting to minimize damage to residual trees and to reduce losses from the southern pine beetle. Overmature stands should be regenerated with species most resistant to SPB attack.

The stand-hazard rating system was developed by Roger Belanger, Principal Silviculturist, Southeastern Forest Experiment Station, and Terry Price, entomologist with the Georgia Forestry Commission. Both men are members of the Stand-Rating Systems and Silvicultural Practices Technology Transfer Team.

Pine Beetle Technology Reaches Northeasternmost State

Interest in the use of aerial photography linked with Loran-C navigation equipment brought representatives from the State and Private Forestry Aerial Survey Team of the Southeastern Area to Old Town, Maine. Chuck Dull and Denny Ward* participated in a fall workshop on guidance technology and strategies for targeted insecticide application, cosponsored by the University of Maine, Maine Forest Service, and CANUSA (International Spruce Budworm Research and Development Program).

Dull and Ward described how they successfully

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used Loran-C technology to determine annual timber mortality associated with SPB infestations in Mississippi. Potential uses for other applications in northern forests were considered.

* Ward is Team Leader and Dull is a team member of the SPB Program's Aerial Survey and Navigation Systems Technology Transfer Team.

Projects Funded In New Hampshire and Georgia

A new study on characterizing flight dispersal of the SPB has been funded at the University of New Hampshire. Its principal investigator is Paul Johnson, formally located at Stephen F. Austin State University in Nacogdoches, Tex. Using existing data from east Texas studies and new information from continuing work at Nacogdoches, he will determine the effects of host distribution, stand hazard rating, weather factors, and population size on beetle dispersal and spot-growth patterns.

Wayne Berisford and Gene Brady, University of Georgia, have been funded to determine whether partial stem treatment of standing pines with insecticides can protect the pines from SPB attack. Uninfested pines located in front of advancing infestations will be treated with either lindane or chlorpyrifos water emulsions on the basal stem, midbole, or entire trunk. Untreated and treated trees will be baited with attractant, and field crews will evaluate the effectiveness of the treatments, checking each tree daily for up to 60 days.

Procedures for determining the profitability of cutting lumber from beetle-killed sawtimber in Virginia (Agriculture Handbook No. 555) are being validated in Georgia. Wesley Wells, of the Georgia Forestry Commission, is in charge of the project. He is being assisted by Bob Westbrook, Team Leader of the Guidelines for Utilizing SPB-Killed Timber Technology Transfer Team.

SPB Awareness Workshop For U.S. Army Corps of Engineers

Roger Belanger presented stand hazard-rating, and silvicultural treatment information to foresters managing Corps of Engineer lands in the Southeastern States. His findings and recommendations were offered at an annual COE Forest Management Meeting this winter.

Belanger emphasized the possible long term benefits of manipulating stands to prevent or reduce SPB-related losses. He is a Principal Silviculturist for the Southeastern Forest Experiment Station in Athens, Ga., and also serves as Team Leader for the Silvicultural Practices and Stand-Rating Systems Technology Transfer Team.

Reprints Available Of Control Tactics Symposium

The use of available knowledge and the development of new techniques for reducing SPB losses have been the objectives of the USDA Expanded Southern Pine Beetle Research and Applications Program. About 40 representatives from the government, industries, and universities met a year ago near Many, La., to synthesize some of the Program's findings in a symposium.

Areas discussed include needs and expectations of managers concerned with SPB control, evaluating treatments at the infestation level and on an area-wide basis, some additional considerations in designing treatment evaluations, and the use of available methods to evaluate an operational control approach—cut-and-leave.

Single copies of the symposium proceedings may be obtained, free of charge, from Dave Webb, Southeastern Area, State and Private Forestry, 1720 Peachtree Road, NW, Atlanta, GA 30209.

U.S. DEPARTMENT OF AGRICULTURE, FOREST SERVICE.
1979. Evaluating control tactics for the southern pine beetle. J. E. Coster and J. L. Searcy, Eds. U.S. Dep. Agric. For. Serv., Tech. Bull. 1613. 118 p.

SPB Inhibitors Attract Another Foe

Researchers in east Texas have discovered that an odor that repels the southern pine beetle actually attracts another destructive bark beetle, the small southern pine engraver, *Ips avulsus*. The SPB inhibitors *endo*- and *exo*-brevicomin and verbenone were placed on healthy loblolly pines in an SPB-infested area. Baited and unbaited pines were fitted with traps made of mesh hardware

cloth and coated with a sticky substance. Four traps were placed on each tree at 3-, 5-, 7-, and 9-m intervals above the ground.

In the inhibitor-treated trees, southern pine beetle landings were reduced 84 percent, gallery construction 92 percent, and egg deposition 88 percent. Baited trees did not come under mass attack by the SPB, although the unbaited trees did.

More small southern pine engraver galleries were found on baited trees than on unbaited trees. Consequently, the baited trees continued to die from attack by either the small southern pine engraver alone or in conjunction with the SPB.

Researchers suggest that the SPB inhibitors may help the small southern pine engraver find host trees. Because of the interactions between the southern pine beetle and *I. avulsus,* the present mixture of inhibitors will not reduce tree mortality in SPB problem areas.

PAYNE, T. L., and J. V. RICHERSON.
1979. Management implications of inhibitors for *Dendroctonus frontalis.* Bull. Entomol. Soc. Swiss 52:323-331.

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Behavioral Chemicals Influence Beetle Dispersion

East Texas researchers studied how pheromones (behavioral chemicals released by an insect when it attacks a host) affect flight behavior of southern pine beetles and checkered beetles. Investigators placed a grid pattern of traps in five loblolly and shortleaf pine infestations. Beetles were removed from these pheromone-baited wing traps for up to 83 days.

Researchers used five different methods for analyzing insect dispersion. Southern pine beetle aggregation was greatest when there were the fewest pheromone sources (newly attacked trees), while SPB dispersal occurred when there were many pheromone sources.

High-density flying populations of southern pine beetles brought about rapid infestation growth and spread. Beetle attacks shifted to other trees 3 to 4 m away. When trees were more widely spaced, emerging beetles dispersed into the surrounding forest, and the infestation stopped enlarging. However, infestation growth could have occurred in more widely spaced stands if many southern pine beetles were present. Investigators found fewer checkered beetles than southern pine beetles, although the predator still aggregated in infestations.

Results indicated that the proper placement of attractants would have the same effect as multiple sources of pheromones. Foresters would reduce the chances of a successful SPB attack in intermediate-sized infestations because beetles would be too scattered to overcome trees.

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Trapping SPB Microsporidans And Nematodes

How do you catch a southern pine beetle in the condition necessary for studying small organisms that reduce its reproduction, such as microsporidans and internal parasitic nematodes? And once you have caught the southern pine beetle, how do you prevent its predator, the checkered beetle, from entering the traps?

Florida researchers developed one answer to the problem—the use of live traps. They constructed a "stovepipe live trap" baited with a male attractant to catch the southern pine beetle. Holes letting in the SPB were too small for entry by the checkered beetle, *Thanasimus dubius.* From 5 to 15 of these traps were hung from hardwood tree branches about 2 m above the ground and spaced at 50 m intervals around the edges of an SPB infestation.

For comparison, investigators removed southern pine beetles from bolts located in the same infestation as the traps. Southern pine beetles caught in live traps had the same number of microsporidans as beetles removed from bolts. Fewer nematodes were caught in live-trapped beetles than in bolt-reared beetles. Researchers concluded that they could catch southern pine

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ADDRESS CORRECTION REQUESTED

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Gainesville, FL 32611

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Department of Entomology, Texas A. & M. University, College Station 77843

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